Space Weather Forecast

Issued on Sunday, 04 February 2024 at 01:11 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Radio Blackouts. Chance of Minor Geomagnetic Storm on Sunday 04 February due to a possible glancing blow from a Coronal Mass Ejection (CME).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been Low, with only common-class flares observed in the past 24 hours. There are currently eight sunspots on the visible disc. A region in the southwest has changed the most significantly, quickly growing and increasing in complexity over the last 24 hours. A newly emerging sunspot has appeared close to the southeast limb, which looks to be large, although is currently difficult to analyse due to its current location. A better analysis of this sunspot region will be conducted once it has rotated into view. No Earth-directed have been observed in the past 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds were reflective of a slow solar wind regime. The solar wind speed has been at background levels throughout. The magnetic field was weak throughout, with only weak variation in the important north-south component. The net result of the above solar wind measures was provisionally Quiet geomagnetic activity throughout.

Energetic Particles / Solar Radiation: Solar radiation levels remain slightly elevated above background levels following the Moderate class X-ray flare on 29 Jan from a sunspot now several days onto the far side. This enhancement remains well below the S1/Minor Radiation Storm threshold.

Four-Day Space Weather Forecast Summary

Solar Activity: Overall activity is most likely to be Low, but with an increasing chance of isolated Moderate-class flares and a slight chance of a Strong-class flare, most likely from the complex sunspot region in the southwest, but also from the large sunspot region emerging on the southeast limb.

Solar Wind / Geomagnetic Activity: A CME which left the Sun at 01/0743UTC may deliver a glancing blow on Sunday 04 February. In addition there may be also be a fast wind enhancement during this period, although likely more biased to effects on 05 February.

Geomagnetic activity is expected to be mostly Quiet at first, but perhaps with a chance of G1/minor storm should any fast wind from a southern hemisphere coronal hole combine with glancing CME effects on day 1 (Sunday 04 February) and a slight chance of similar activity on 05 Feb should this happen slightly earlier. A return to Quiet conditions on days 3 and 4 (06-07 Feb).

Energetic Particles / Solar Radiation: High energy proton flux is expected to remain below the S1/Minor Radiation Storm level, with a daily slight chance of exceeding the S1 threshold during

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the period.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	25	15	5	1
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	45	45	45	45
Very Active	R3 to R5 X	No	5	5	5	5

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	10	10	10
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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